

Phthalates Action Plan

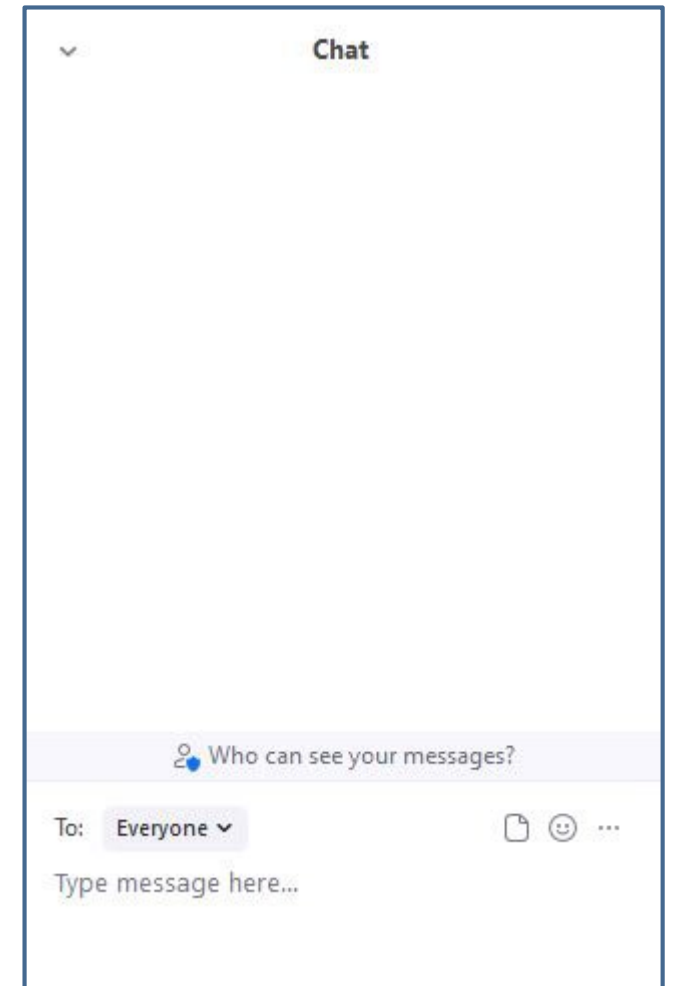
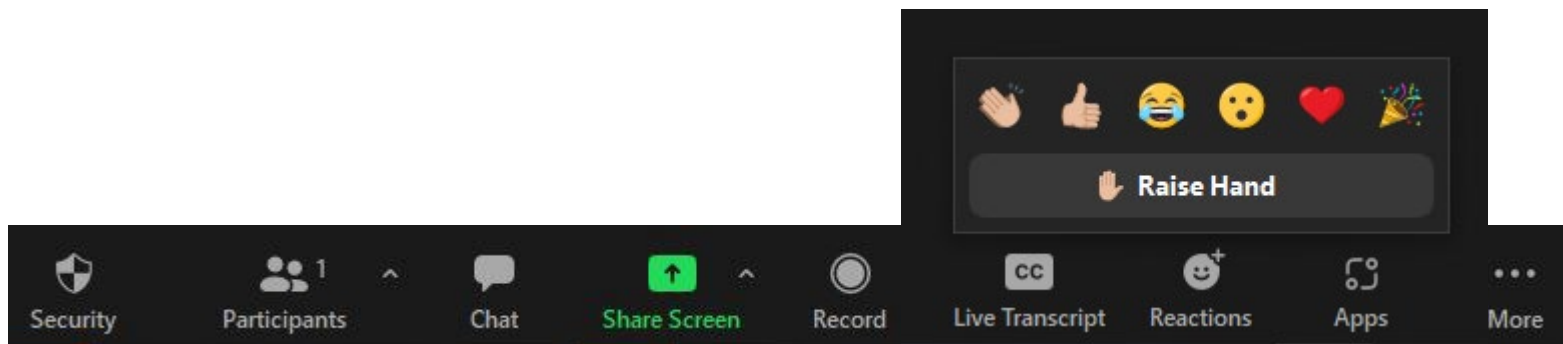
Advisory Committee Meeting – March 24, 2022

Phthalates in the Environment



Zoom meeting logistics

- Technical issues send to **host** in chat
- Questions or comments send to **everyone** in chat
 - We will address along the way and during discussion.
- During discussion, raise hand to share verbal input or questions
- We will reschedule in event of a crash



Today's agenda

- 1 9:00 AM: Agenda and introductions
- 2 9:10 AM: March 17 meeting recap
- 3 9:20 AM: Discussion—phthalates in the environment
9:50 AM: Break
- 4 10:00 AM: Discussion—phthalates in the environment (continued)
- 5 10:40 AM: Public input
- 6 10:50 AM: Next steps

Housekeeping

Project webpage: <https://bit.ly/phthalates-AP>

- Agenda
- Agenda attachments
- Meeting slides
- Input compilation

This project has been funded wholly or in part by the U.S. Environmental Protection Agency (EPA) under assistance agreement PC-01J18101 to the Washington Department of Ecology. The contents of this document do not necessarily reflect the views and policies of the EPA, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.



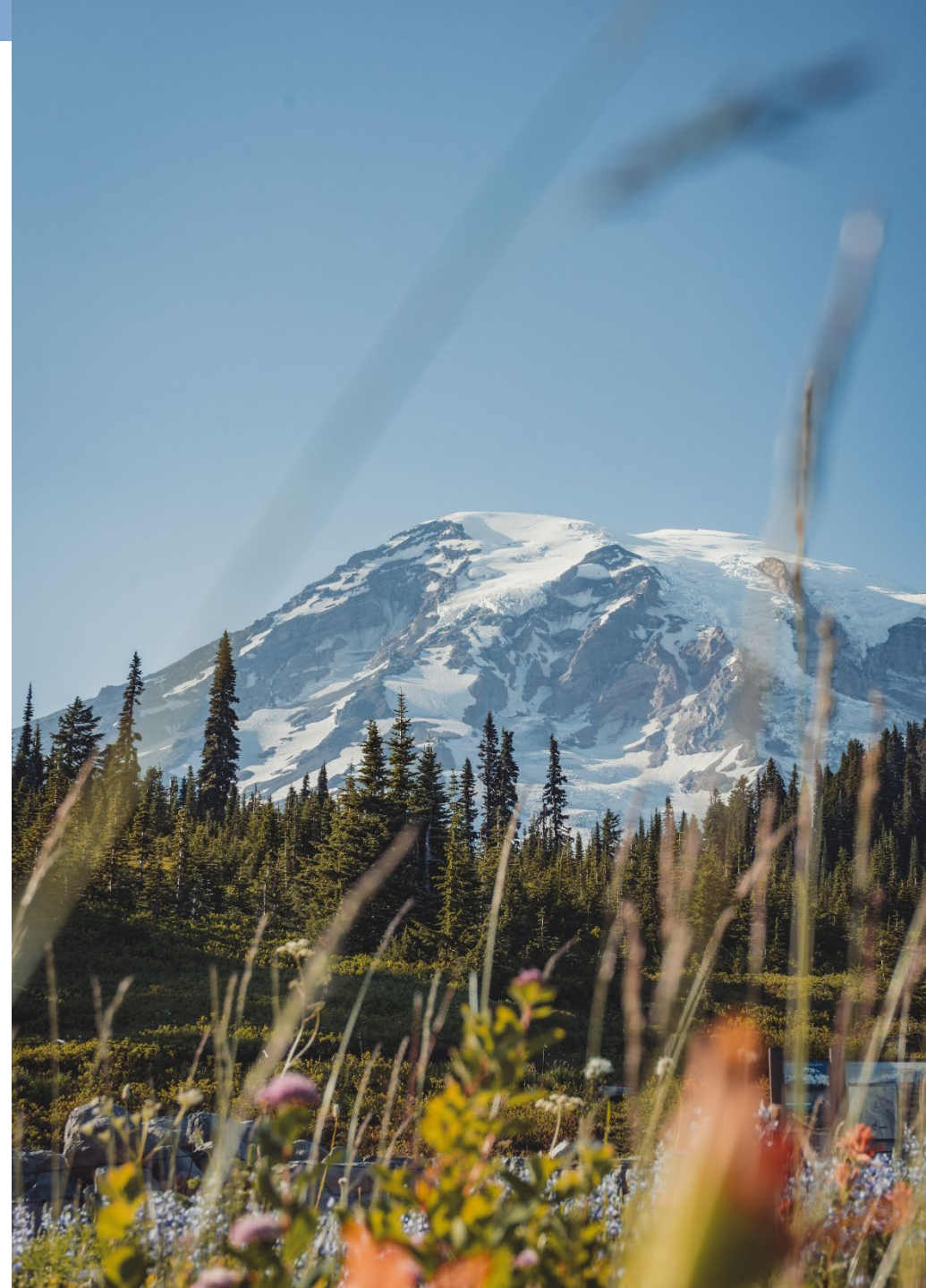
Part One: Introductions

Introductions

- Committee members
- Agency staff
 - Health
 - Ecology
 - Fish and Wildlife
 - Natural Resources

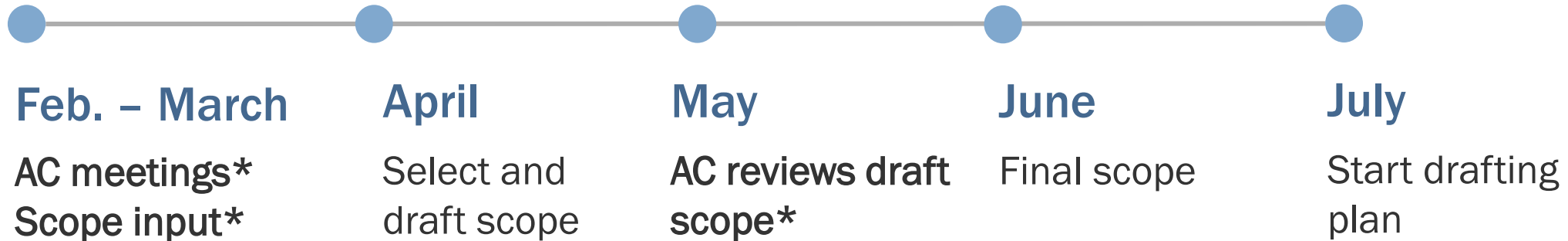
Our focus

- Working toward recommendations that will reduce:
 - Human exposure to phthalates
 - Environmental contamination
- Statewide, big picture view
- Paying attention to:
 - Sensitive species and habitats
 - Sensitive or overburdened populations



Action plan scoping

● Scoping
1st Half 2022



*Advisory committee participation

Scoping input

- Verbal input and discussion
- Input compilation available on the project webpage
- Review and provide corrections
- Updated throughout scope input meetings
- Online comment form (on project webpage)

<https://hwtr.ecology.commentinput.com/?id=haD3V>



Input Compilation Phthalates Action Plan

Overview

The Washington Departments of Ecology and Health are collaborating to complete an action plan focused on reducing sources, uses, and releases of phthalates. This document compiles the input we've received throughout the process of developing the action plan.

We received this input from members of the advisory committee as well as other stakeholders and the public. This document includes input we received via all methods, including during meetings and webinars, through our [online comment form](#),¹ and via email or other direct communication. This document will be regularly updated as we develop the action plan.

Meetings by topic area

- Focus meeting input on scheduled topics
- Stay flexible to overlap
- Written input on **any** topic



“Parking lot” topics

- After today, our team will work on the draft scope
- Based on the drafting process, we will focus a fifth meeting or workshop on areas we need more input or information
 - Presentations by committee members?
 - More discussion on certain topics?
 - Suggestions for narrowing?



Productive, fair meetings

- Open minds
- Collaboration and not confrontation
- Recognize that people are not always going to agree
- Everyone has a chance to be heard
- Respect each others' opinions
- Keep on task
- Direct and straightforward communication
- Transparency





Questions?





Part Two: March 17, 2022 Meeting Recap

March 17 recap: Wastewater and biosolids

- Emphasis on upstream **source reduction**
- Wastewater and biosolids are ‘pass-through’ processes
- Need to document phthalates throughout life cycle
- Hundreds of WWTP facilities in WA—secondary and tertiary treatment
- Discussed current monitoring of wastewater, biosolids
 - Limitations and challenges—EPA 8270, EPA SW-846
 - Biosolids—current testing focused on metals, pathogen reduction
- References
 - Environment and Climate Change Canada / Health Canada Report
 - WA Toxics Coalition—Puget Sound Down the Drain Report
 - Phthalate Esters in The Handbook of Environmental Chemistry

March 17 recap: Solid waste and recycling

- Landfill leachate
- Old products—disposal and also reuse concerns
- PVC recyclability—U.S. Plastics Pact baseline report
- Mechanical vs. chemical recycling, pyrolysis, and incineration
- Additives and recycling (such as antioxidants)
- Circular economy—remove toxics from recycling stream
- Emphasis on **source reduction**



Recap Questions?





Part Three: Discussion

Phthalates in the Environment

Today's topic area: Phthalates in the environment

- Identify pathways that lead to environmental contamination.
- Discuss **recommendations to reduce potential impacts** on biota and the environment.
- Hear **ideas and input from stakeholders**.



Discussion areas



Phthalates
in air

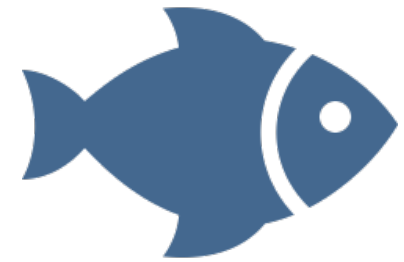


Stormwater
and impact
on phthalates
in sediment



Soil

- Cleanup sites?
- Agricultural uptake?



Biota

- Fish, shellfish
- Marine mammals
- Plants—uptake

Discussion themes

- Help us prioritize data gaps to understand the sources and impacts of phthalates across environmental pathways.
 - Input on sampling strategies, analytical methods, screening levels, environmental transformation products, which phthalates are included and not included in monitoring, etc.
- Phthalates are not persistent in the environment—consider how high release and ‘pseudopersistence’ can inform management strategies.

Air

- Phthalates are hazardous air pollutants: DMP, DBP, DEHP
- A recent National Emissions Inventory estimated 95 tpy DEHP (gas) in King County¹
- Air monitoring results: None identified for Washington yet
- Peer-reviewed literature reports phthalates in particulate matter and ambient air samples^{2,3,4}



Ambient air—discussion questions

- What monitoring of phthalates in ambient air, including particulate matter, is needed to support understanding of the sources and environmental fate of phthalates?
- Do we have data to determine the relative contribution of point and nonpoint sources to air?



Scope input

- First time hearing of pseudo-persistence. Please share the definition.
- Climate impact needs to be captured for phthalates, since they are made from fossil fuels. It is important to capture the upstream piece for phthalates, especially since they are used in vinyl.
- Persistent tag can be misleading. Phthalates are readily biodegraded.
- Context is important. Where and why are these materials being used in the first place? In many cases, the impact of vinyl material use on climate, water, etc., is more favorable than using alternatives. A broad view needs to be taken to consider the relative impacts.
- Removal rates and background levels should be considered. Should be cautious using the term “persistent.”
- Disagreement around whether polyvinyl chloride (PVC) has lower climate impacts.
- Dust in ambient air related to demolition sites, wrecking yards, and industrial sites should be monitored for phthalate emissions.

Scope input

- Plasticizers used in automotive industry. There are restrictions on molecular weight of phthalates used in these applications (dashboards, leather) (> C8 molecular weight used). Unlikely to contribute to air significantly.
- Disagreement on brake pads. Need to look at this.
- Studies do find phthalates in house dust. Mentioned that the detection levels of higher-molecular-weight phthalates are low.
- On air monitoring, Great Lakes Integrated Atmospheric Deposition Network. May be useful to consider a similar program for the Puget Sound area.
- Need to look at phthalate use in pesticides, especially in Eastern Washington. Consider monitoring.
- Studies from Europe show phthalates in dust are not bioavailable.
- Disagreement about phthalate use in pesticides. Not regulated under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) for that use.

Stormwater and sediment

- Numerous reports from Ecology and partners, including Stormwater Workgroup/SAM, found phthalates in stormwater and sediments.^{5,6,7,8}
- A multiagency Sediment Phthalates Workgroup proposed an air–stormwater–sediments pathway for phthalate contamination of sediments (DEHP and BBzP).⁹
- Many other researchers working in this area.^{10,11}



Stormwater and sediment—discussion questions

- What is the importance of stormwater contributions to phthalate concentrations in Washington state waters and sediments?
- What recommendations could we make to mitigate stormwater and sediment contamination and improve monitoring for phthalates?



Scope input

- Zero Waste Washington (ZWW) Phase 1 study looking at exterior use products, items used outdoors (such as paints, building siding, automobile uses, signage). Phase 2 is underway, looking at additional products.
- Surface water columns and groundwater should also be looked at, with particular interest in groundwater due to movement toward using treated wastewater to replenish groundwater.
- On groundwater recharge, drinking water criteria needs to be met.
- How many phthalates have a drinking water standard? Criteria focuses on six phthalates, possibly only di(2-ethylhexyl) phthalate (DEHP) for drinking water. Are these standards sufficient? This is an area to look at.
- Mentioned that phthalates mostly partition to sediments and not water phase, and this may tie into the reasoning for the drinking water standard focus.

Scope input

- Are there a lot of vinyl side panels on houses in Washington? Would that be considered a source [of phthalates]?
- Input that vinyl siding does not contain plasticizers—phthalates or otherwise. Siding is a rigid product. The flexibility is due to being very thin.

Break

- 10 minutes
- Stretch and get a refill!





Part Three: Discussion Continued

Phthalates in the Environment

Soil

- Cleanup levels for six phthalates are present in CLARC (Cleanup Levels and Risk Calculation) from Ecology.¹²
- EPA Regional Screening Levels are available for those six phthalates.¹³
- Ecology's Dirt Alert program focuses primarily on arsenic and lead and legacy sources of contamination.¹⁴
- Studies in China find phthalates (from plastics used in greenhouses and as mulch) leach to agricultural soils and some food crops take them up.¹⁵



Soil—discussion questions

- How much monitoring for phthalates in soils has occurred in Washington?
- Are all the polyethylene films used in agriculture in Washington phthalate-free?



Scope input

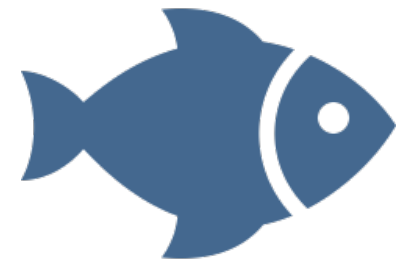
- PVC hay bale wraps. Not all polyethylene? Need to look at these further.
- Packaged mulch and soils. What is the packaging material for these?
- Some phthalates were previously used in polypropylene films, but the levels used were very small (ppb).
- Actually use polypropylene, not polyethylene, for these films.
- A list of products that use various materials would be useful. This information is not readily available.
- A study to survey what products contain PVC in the curbside collection of plastics found that the number is small relative to other materials.
- Hard to categorize all the uses. This is difficult for many stakeholder groups.

Scope input

- Supply chain. Folks protect this through confidential business information (CBI). Vinyl Institute is advocating for supply chain transparency. Especially hard to document for smaller businesses.
- IHS Markit report contains production information. EPA use reports also can provide information on uses in particular applications.
- Irrigation pipe does not use plasticizers. These are rigid, pressure-bearing materials.

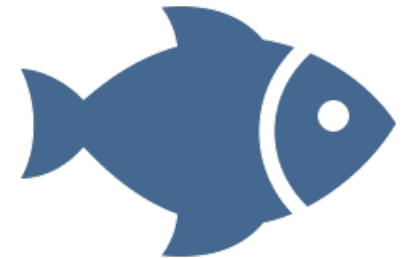
Biota

- Ecology does not conduct routine monitoring studies on biota for phthalates.
- Some peer-reviewed studies highlight the potential for endocrine-related effects on aquatic species, others suggest low toxicity.^{16,17}
- PSEMP and the Toxics in Fish Implementation Strategy for Puget Sound identify phthalates as contaminants of concern.¹⁸



Biota—discussion questions

- Which species are sensitive to phthalates or their breakdown products in the environment? Are some phthalates of greater concern?
- Do we need to improve methods for monitoring phthalates in biota?
- What do we know about phthalates in fish, game, and vegetation that humans consume? Are there human health implications?



Scope input

- Look at sand lance and herring. Use seagrass as egg laying substrate.
- For analysis, phthalates are metabolized to monoesters in fish species. Good correlation between monoester and parent phthalate in terms of concentrations. So, good to look at monoesters to get more accurate measurements of parent phthalate concentrations.
- Tissues. Depends on the phthalate. Higher molecular weight metabolized in liver. Lower molecular weight metabolized in kidney. For classical human health concerns, generally look at muscle tissue. This may not take into consideration groups that use other parts of the fish.
- Some recent studies from China and Taiwan show that most fish species are safe for human consumption.
- Are there specific enzymes responsible for breaking down diester to monoesters? What else could be contributing to that breakdown in the environment? This could relate to breakdown in landfills, etc., where enzymes may not be present.

Scope input

- Studies using reference doses for comparisons should be looked at carefully.
- Diet is still a significant exposure pathway. Not as specific to fish, so it appears relative contribution may be lower for fish.
- Although present in fish, phthalates are not contributing as much to risk component. Phthalate concentrations in fish tissue are not exceeding the screening value at consumption or analysis.
- Need to consider chemical mixtures for toxic endpoints.
- Canadian risk assessment and European risk assessment are available for phthalates (cumulative). This is publicly available information.
- The National Health and Nutrition Examination Survey (NHANES) data is a good source for exposure measurements in humans.
- Phthalates are metabolized rapidly, so NHANES does capture relatively current exposure in a snapshot—needs to be used carefully when extrapolating for longer-term exposure.

Scope input

- NHANES is good for a snapshot in time of phthalate exposure in a large population.
- Lots of work already done looking at risk [of phthalates] in the environment (above mentioned Canadian and European assessments). Look at entire life cycle and risks to many organisms.
- Unclear whether analytical labs are currently analyzing for monoesters/phthalates in tissues and if methods for monoesters are available.
- Look at superfund reports for sites in Washington that have data on levels measured in biota and other media.
- High-fat foods like meat and dairy have high phthalate concentrations, suggesting environmental sources (such as vegetation, feed).
- NHANES underrepresents minorities and indigenous populations. Disagreement on this point. NHANES may oversample these populations. We should review.



Part Four: Public Input and Questions

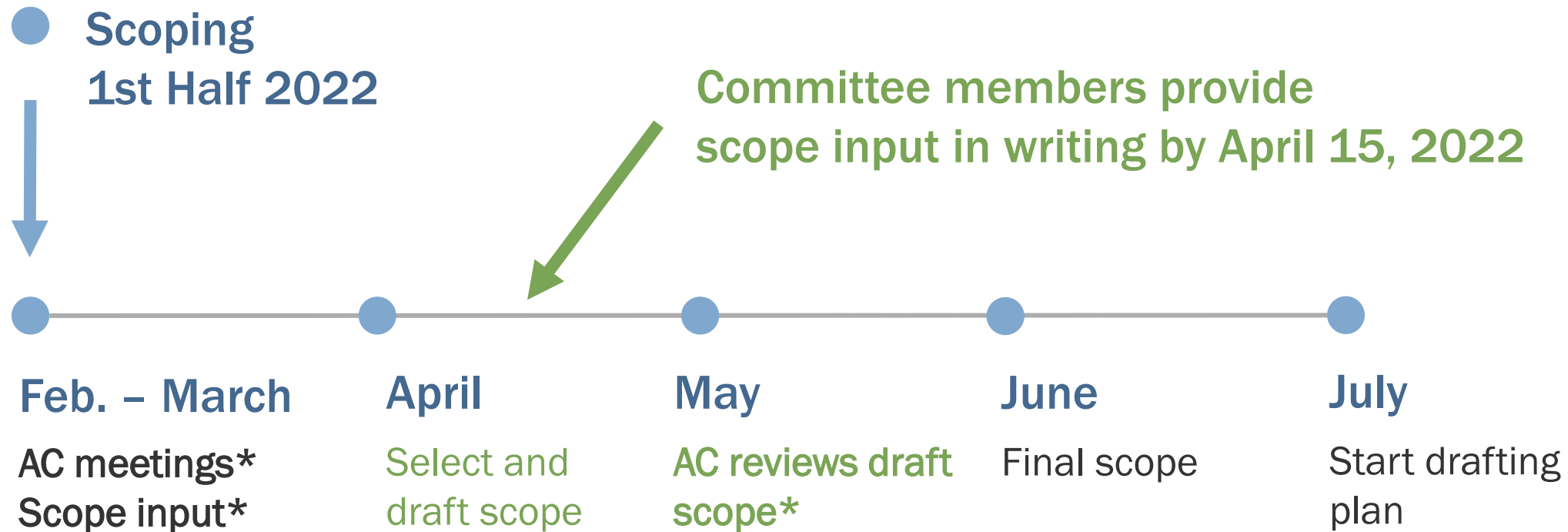
Public input

- NHANES recommends sample weighting in all epidemiological investigations to better represent the general population. These are used in any well-done NHANES epidemiologic analysis.
- More information is needed on levels in biota but also on production volume and use—and this may be a more productive path than sampling studies.
- Washington Department of Fish and Wildlife (WDFW) monitored phthalates in fish in the 1990s, but the data was riddled with quality assurance issues. Until there are better analytical methods for measuring in tissues, we will be data deficient.
- Quality assurance issues lead to method blank detects. Possibility of looking at metabolites instead to avoid or reduce potential contamination.
- Very difficult to determine in wild fish if endocrine effects are linked to a particular chemical, since they are exposed to a broad range.



Part Five: Next Steps and Closing

Next steps



*Advisory committee participation

Project information and contact

- Check project webpage for documents:
<https://bit.ly/phthalates-AP>
- Contact us if you have questions:
 - ChemActionPlans@ecy.wa.gov
 - 360-999-7566



Project links

- EZ view project webpage: <https://bit.ly/phthalates-AP>
- Online comment form:
<https://hwtr.ecology.commentinput.com/?id=haD3V>
- Washington Administrative Code 137-333-340:
<https://app.leg.wa.gov/WAC/default.aspx?cite=173-333-340>

Footnote links

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